Problem G: The Lion and the Unicorn

The conversation with Humpty Dumpty came to an abrupt end and a heavy crash shook the entire forest. The next moment thousands of soldiers came running through the wood, but Alice was not surprised; somehow she expected to see all the King's horses and all the King's men after Humpty Dumpty's great fall.

Alice encountered the White King, who introduced her to his two messengers: Haigha and Hatta. Haigha was bringing some breaking news to the King:

"They're at it again!"

"Who are at it again?" Alice ventured to ask.

"Why, the Lion and the Unicorn, of course," said the King.

"Fighting for the crown?"

"Yes, to be sure," said the King. Alice remembered an old song she had learned at school:

> *The Lion and the Unicorn were fighting for the crown:*
> *The Lion beat the Unicorn all round the town.*
> *Some gave them white bread, some gave them brown:*
> *Some gave them plum-cake and drummed them out of town.*

Figure 1: Alice serving the plum cake

Alice, the White King and his messengers went all to see the Lion and the Unicorn, who were in the middle of a fight. After a while, they decided to take a rest, and have some plum cake. Alice was left in charge of cutting the cake.

"I say, this isn't fair!" cried the Unicorn. "she has given the Lion twice as much as me!"

"She's kept none for herself, anyhow," said the Lion.

If the plum cake has the shape of a cylinder with radius **r** and height **h**, how much cake did the Lion and the Unicorn eat?

Input

Input starts with a positive integer **T**, that denotes the number of test cases ($T \leq 50000$).

Each case is described in a line that contains two integers: **r** and **h**, which represent the radius and height of the cake, respectively. The units of the measurements is centimetres.

$1 \leq r, h \leq 500$

Output

For each test case, print the case number, and then print the volume of the piece of cake eaten by the Lion, followed by the volume of the piece eaten by the Unicorn, in cubic centimetres.

Print the answers as real numbers with exactly two digits after the decimal point.

Sample Input

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2
20 10
50 30
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Output for Sample Input

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Case 1: 8377.58 4188.79
Case 2: 157079.63 78539.82
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